

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

REMARKS/ARGUMENTS

Claims 16 - 30 were examined in the Office action dated August 27, 2003. The Examiner rejected claims 16 - 30 under 35 U.S.C. § 112, first and second paragraphs, and under 35 U.S.C. §103(a). In addition, the Examiner rejected claim 25 under 35 U.S.C. §102.

By this Amendment, Applicant has amended claims 16 - 20 and 22 - 24. Applicant now submits claims 16 - 30 for reconsideration.

Response to the Rejection of Claims 16-30

Under 35 U.S.C. 112, First Paragraph

The Examiner rejected claims 16 - 30 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner states in paragraph number 3 on page 2 that "the rejection concerning what is meant by fastening the free ends of the preform . . . will be maintained in light of some continuing confusion presented by applicant's response to this rejection."

Initially, the Examiner questions at page 3 whether "some separately formed tire components such as the tire underlayer (presumably the tire innerlayer) have their free ends fastened apparently off the drum." Applicant assumes the Examiner's question here concerns Applicant's statement regarding "perform components of the raw tire that are prepared separately . . . may be linked at the free ends." Applicant notes that this

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

statement does not state the linking step is performed off the drum. Rather, the linking is performed after the perform is wound on the support as claim 16 recites in step (d): "adding the complementary preform to the deformable preform on said support in said assembly" and then in step (e): "linking free ends of the complementary preform together."

The Examiner next states on page 3 that "the statement that the carcass free ends are not linked is particularly confusing." Applicant believes the context of this statement may assist in resolving this issue.

In the Office action dated February 13, 2002, the Examiner rejected claim 16 under section 112 stating on page 3 that "it is not entirely clear what is meant by 'fastening of the free ends of the platform' and how this fits into known tire building" in that "the free ends of the carcass ply are not typically fastened prior to [toroidal] shaping."

Applicant assumed that it was unclear to the Examiner how linking free ends applies to known tire building given the situation when the ply is wound more than 360 degrees one of the free ends of the ply would be covered and as a result the ends would not be linked. Applicant intended to distinguish this particular situation from fastening free ends of the perform. See, for example, Figures 1, 2 and 3a, where it is shown that ends of the perform may abut one another thereby enabling "linking free ends of the complementary preform together."

Applicant notes that the Examiner states that he "assumed that this was simply referring to the normal and typical joining of ends of almost all strip applied tire components." Applicant

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

agrees that "the normal and typical joining of ends of almost all strip applied tire components" may be used for "linking free ends" and that this technique is known to those skilled in the art of manufacturing a tire.

In view of the above, Applicant submits that the rejection under 35 U.S.C. § 112, first paragraph, should be withdrawn.

Response to the Rejection of the Claims

Under 35 U.S.C. 112, Second Paragraph

The Examiner rejected the claims under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner raises five issues, each of these will be addressed in turn.

First, the Examiner states in paragraph number 3 on page 4 that claim 16 defines "a method of modifying a process for manufacturing a tire." Applicant has amended claim 16 to claim a "method of manufacturing a tire" as suggested by the Examiner.

Second, the Examiner states in paragraph number 3 on pages 4 and 5 that language in claims 16 and 25 regarding "the conductor path extends 'across' or 'over' or 'along' a length of width of the preform or the tire" is indefinite. The Examiner then questioned "what in claim 16 in any way defines that the loop extends along the tire periphery (i.e. apparently the tread region) as opposed to for example the sides."

Applicant has amended claim 16 to recite that "said third rectangular general shape is located under the tread area of the tire." Similarly, Applicant notes that claim 25 recites that

Appln No. 09/581,329

Amdt date January 27, 2004

R ply to Office action of August 27, 2003

the "conductive loop" is "fixed under [the tire's] tread." Accordingly, Applicant submits that the scope of claims 16 and 25 are definite under section 112.

Third, on page 5 the Examiner asks for clarification regarding the term "complementary perform" noting that the Examiner "read this as simply defining that the generally rectangular complementary perform also simply generally has its long dimension in the circumferential tire direction the same as the inner liner and carcass, not that it is for example the same size or width."

Applicant did not intend to impart any special unique meaning to the term "complementary" in its prior response. Applicant suspects the confusion may have resulted from Applicant's practice of quoting all elements of a claim that may relate to a particular element that is presently being discussed.

Fourth, the Examiner states on page 5 that "it is still not considered that the scope of protection afforded by defining that the conductor is fixed 'in a loose manner' can be adequately and readily ascertained."

Applicant maintains that this claim language does provide sufficient guidance to one skilled in the art when considered in the context of the specification. For example, the specification at page 8, lines 25 to page 9 line 3 discusses techniques of the overtacking and tacking kind that may be used to fix the conductor in a loose manner. In addition, the discussion relating to Figure 4 at page 9, lines 8 - 22 describes examples of how the conductor is loosely fixed so that

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

it is initially in a "zigzagged" configuration and can then "withstand the stretching of the preforms" up to, for example, 150%.

One skilled in the art would read the term "fixed thereon in loose manner" in the context of the entire disclosure. Hence, it would be apparent to one skilled in the art that this allows at least a portion of the conductor to move relative to the preform so that the conductor will not break during toroidal shaping. For example, the conductor may be attached to the complementary preform so as to hold the conductor to the complementary preform, yet allow the conductor to straighten from the "zigzagged orientation as the complementary preform is stretched" as discussed in the specification.

The particular "zigzagged" path taken by the conductor is not critical to whether the conductor is loosely fixed. Rather one skilled in the art would understand that the path of the conductor may take some form other than "zigzagged" such as a more curved path.

Applicant respectfully submits that claim 16 meets the requirements of section 112, second paragraph.

Fifth, the Examiner again objects to the phrase "linking free ends." Applicants have addressed this issue in their response to the rejection under section 112, first paragraph, set forth above.

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

Response to Rejection of Claims 16 - 18 under 35 U.S.C. 103(a)

The Examiner rejected claims 16 - 18 under 35 U.S.C. 103(a) as being unpatentable over Pollack et al. (US 5,181,975). The February 13, 2002 Office action states, in part, in paragraph 6:

Pollack et al. discloses building a tire with a preformed conductor fixed therein, this conductor having what can be termed a "rectangular general shape" (e.g. note fig. 4). Further, this reference clearly indicates that the conductor is incorporated in the tire on the drum prior to toroidal shaping - note esp. col. 10, lines 6-18. As already noted, it is not clear what is included by requiring that the conductor be "fixed in a loose manner" - it is however submitted that since some relative conductor movement is contemplated (note esp. col. 10, lines 14-15), it is not unreasonable to consider this to meet the present claims. . . . Although the conductor in this reference is located adjacent the beads and thus is not located under the tread, nothing in the present claims defines over a location in the beads.

Claim 16 now recites a "perform having at least one conductor fixed thereon in a loose manner, along a path having a third rectangular general shape" where the "third rectangular general shape is located under the tread area of the tire."

Pollack et al. does not teach or suggest such a location for a conductor. Rather Pollack et al. discloses at column 8, lines 44 - 48 "an integrated circuit transponder with its associated antenna coil" which are "positioned adjacent the

Appln No. 09/581,329

Amdt date January 27, 2004

R ply to Office action of August 27, 2003

annular tensile member" which is located on the sidewall of the tire. Pollack et al. teaches that this position of the antenna coil is mandatory "to enable the antenna coil to form a secondary winding of a transformer, the primary winding of which is the annular tensile member."

Moreover, as Pollack et al. is not concerned with the problems associated with placing conductors under the tread, it does not teach or suggest that such problems may be overcome by using a "perform having at least one conductor fixed thereon in a loose manner" as set forth in the claimed method. Accordingly, the invention of claim 16 was not taught or suggested by Pollack et al.

Claims 17 and 18 that depend on claim 16 also are patentable over these references for the reasons set forth above. In addition, these dependent claims are patentable over these references for the additional limitations that the dependent claims contain.

Response to Rejection of 25 under 35 U.S.C. 102(b)

The Examiner rejected claim 25 under 35 U.S.C. 102(b) as being anticipated by DE 2524463 to Breuer. The February 13, 2002 Office action states at paragraph 7:

DE '463 discloses a tire having an implanted conductor under the tread that further would seem to be in "rectangular general shape" when flat and oriented in the claimed manner in light of figs. 2a and 2b.

Appln No. 09/581,329

Amdt date January 27, 2004

R ply to Office action of August 27, 2003

Independent claim 25 claims a tire having "fixed under its tread, at least one conductive loop which has, when opened out flat, a rectangular general shape, a short side of the rectangular general shape extending substantially over a width of the tire and a long side of the rectangular general shape extending substantially along a periphery of the tire."

The conductor 3 in Breuer is not fixed under the tread of the tire. Rather, the conductor 3 is located in the tread of the tire. See Figure 1 in Breuer which shows a carcass 5, a belt 4 and a tread covering the belt. Figure 3 in Breuer illustrates in detail the path of the conductor 3 in the tread.

Accordingly, claim 25 is not anticipated by Breuer.

Response to Rejection of Claims 16 - 19 under 35 U.S.C. 103(a)

The Examiner rejected claims 16 - 19 under 35 U.S.C. 103(a) as being unpatentable over Schuermann (US 5,479,171). The February 13, 2002 Office action states in paragraph 8:

Schuermann discloses building a tire with an antenna formed from a conductor shaped in rectangular form (fig. 1). Further, the reference indicates that the antenna can be incorporated within the structure of the tire (e.g. sidewall) in an "integrated manufacturing process" (col. 3, lines 48-52). Although this reference does not provide any more specifics of the manufacturing process, it is well known, conventional and common in this art to build up the various tire plies on a cylindrical drum followed by expansion to toroidal form as claimed. To incorporate

Appln No. 09/581,329

Amdt dat January 27, 2004

Reply to Office action of August 27, 2003

the rectangular conductor during this initial building on the cylindrical form would therefore have been an obvious manner to build the desired tire. Further, to aid in building efficiency as well as to help maintain the desired shape of the antenna, to preincorporate the rectangular conductor forming the antenna within an elastomeric substrate would have been obvious, it further being noted that it is extremely common and well known in this art to preincorporate almost every reinforcement material with elastomer prior to the building steps for similar reasons. Further, as is well known, the embedded reinforcement materials in tires commonly do reorient within the tire (e.g. "pantograph") during tire building/shaping (prior to curing) and thus it would seem reasonable to term such as "loose" fixing - following such conventional embedding techniques would thus likewise be expected to result in "loose" fixing of the conductor.

Claim 16 now recites a "perform having at least one conductor fixed thereon in a loose manner, along a path having a third rectangular general shape" where the "third rectangular general shape is located under the tread area of the tire."

Schuermann does not teach or suggest such a location for a conductor. Rather Schuermann teaches that windings are placed in the lateral portion of the tire, i.e., close to the rim. See Figure 3.

Moreover, as Schuermann is not concerned with the problems associated with placing conductors under the tread, it does not

Appln No. 09/581,329

Amdt date January 27, 2004

R ply to Office action of August 27, 2003

teach or suggest that such problems may be overcome by using a "perform having at least one conductor fixed thereon in a loose manner" as set forth in the claimed method. Accordingly, the invention of claim 16 was not taught or suggested by Schuermann.

Claims 17 - 19 that depend on claim 16 also are patentable over these references for the reasons set forth above. In addition, these dependent claims are patentable over these references for the additional limitations that the dependent claims contain.

Response to Rejection of Claims 20 - 30 under 35 U.S.C. 103(a)

Claims 20 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuermann (US 5,479,171) taken in view of WO 90/12474 to Malmer et al. The February 13, 2002 Office action states in paragraph 9:

As to claim 10 directed to the tire, Schuermann only seems to depict the antenna located in the sidewall of the tire. WO '474 is directed to similar sensor systems and in particular indicates that the conductor or antenna can suitably be provide in a number of locations in the tire, including in the tread area (note esp. fig. 4). to provide the rectangular antenna of Schuermann in the tread area would therefore have been obvious in light of this teaching.

First, regarding claims 20 - 24 that depend on independent claim 16, the cited references show no appreciation of the problems associated with placing conductors under the tread. As

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

a result, they not teach or suggest that such problems may be overcome by using a "perform having at least one conductor fixed thereon in a loose manner" as set forth in the method of claim 16.

Moreover, one skilled in the art would not have been motivated to combine the teachings of Malmer et al. with Schuermann. At column 1, lines 35 - 43 Schuermann refers to Malmer et al. as having several drawbacks and concludes that such a system is "more difficult to manufacture and less mechanically reliable." Thus, one skilled in the art would not be encouraged to look for Malmer et al. to modify the position of the coil antenna in Schuermann.

Furthermore, when a tire is manufactured, stretching problems are more important in the tread area in comparison to the sidewall of the tire. Thus, it would not have been obvious to simply reposition the Schuermann conductor from the sidewall to the tread area since repositioning the conductor would, for example, adversely affect the manufacturing process because the periphery of the tire is a very sensitive portion during manufacture. Manufacturers do not accept modifications in that manufacture, unless they can be reasonably sure that it does not change the mechanical properties of the tire, which of course have the utmost priority. The invention of claim 16 provides a solution to this problem through the use of the "perform having at least one conductor fixed thereon in a loose manner." In this way, tire manufacturers may embody one or more loops or coils in the periphery of a tire without substantially modifying their manufacturing process. Thus, the method of claim 16

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

provides a solution to problems that were not adequately addressed by the prior art. As such, claim 16 is patentable over the cited references.

Regarding claim 25, the cited references do not teach or suggest a tire having "fixed under its tread, at least one conductive loop which has, when opened out flat, a rectangular general shape, a short side of the rectangular general shape extending substantially over a width of the tire and a long side of the rectangular general shape extending substantially along a periphery of the tire." Even if there was motivation to combine these references (which as discussed above there is none), the combination does not teach or suggest the specific structure of claim 25. Accordingly, claim 25 is not obvious in view of the cited references.

Claims 20 - 24 and 26 - 30 that depend on claim 16 and 25, respectively, also are patentable over these references for the reasons set forth above. In addition, these dependent claims are patentable over these references for the additional limitations that the dependent claims contain.

CONCLUSION

Claims 16 - 30 are neither anticipated by nor obvious in view of the cited references considered either separately or in combination. Accordingly, Applicant submits that the pending claims are in condition for allowance and request that a Notice of Allowance be issued for this application.

In the event the Examiner has questions regarding this Amendment, Applicant requests that the Examiner contact

Appln No. 09/581,329

Amdt date January 27, 2004

Reply to Office action of August 27, 2003

Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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